



Donna Waters
Optical Design Consultant
www.pcopticalengineering.com

Expert in Zemax
20+ years of experience as an optical engineer
Master of physics and optics

Services: optical specification development, lens design, ISO 10110 toleranced lens drawings, precise CAD models of the lenses with tolerance tables, stray light analysis, prototype fabrication and test management, and technical presentations.

Optical design experience: aerospace instruments, diffractive optics, virtual reality HMDs, augmented reality glasses (waveguide and combiner), LIDAR optics, microdisplay projectors, anamorphic lens systems, ophthalmoscopes, spectrometers, visible and fluorescence microscopes, cameras, camera accessories (smartphone, DSLR, and cine), illumination optics (LED, laser diode, and fluorescent), fiber coupling optics, and flux concentrators (IR and solar).

Design examples: www.pcopticalengineering.com/design-examples/

In-house tools: Zemax Premium, Matlab, Mathcad, optical prototyping laboratory

Experience

Optical Consultant DBA Proof of Concept Optical Engineering, LLC

Feb 2013 to present

Sr. Optical Engineer at Micron Technology

Apr 2012 to Aug 2012

Modeled FLCoS picoprojectors in Zemax. Designed and fabricated a microdisplay viewer with integrated illumination optics. Micron ended picoprojector development in Aug 2012.

Sr. Optical Engineer at Ball Aerospace & Technologies

Dec 2002 to Jan 2011

Created optomechanical models of scientific instruments in ASAP and FRED to analyze the effects of stray light (surface scatter, glints, polarization effects, fluorescence, diffraction, interference, ghosting, ASE, etc.) on performance. Applications included LIDAR, lasercom, remote sensing, thermal imaging, and astronomy. Designed telescopes, thermal imagers, and optical test systems. Responsible for requirements management on the TSAT program, including specifications/ICD development, requirements flowdown, validation/verification and status reporting.

Optical Consultant at Florida Solar Energy Center

Jan 2002 to Dec 2002

Traced rays in ASAP to support the development of a fenestration rating system for tubular skylights.

Staff Physicist at Wave Optics

Mar 2000 to Apr 2001

Responsible for the R&D of collimating fiber arrays, polarizing splitter/combiners, and TEC fibers. Redesigned and built test fixtures.

Early Career Summary (1991-2000):

Materials Scientist and Photon Chaser

- Developed new thermal composite materials for the space shuttle at NASA-Ames
- Evaluated photoelectrodes for solar wastewater purification at Sandia National Labs
- Recorded photo-excited electron dynamics using one of the world's first femtosecond lasers at UC Santa Cruz
- Co-developed a fabrication process for Graetzel solar cells at UCSC, later visiting Graetzel's group in Switzerland
- Co-developed a fabrication process for Si solar cells at ZAE-Bayern in Germany
- Used spectroscopy to reveal the chemistry behind solar cell back-contact formation at NREL and presented my results at the 2nd World Conference on PV Solar Energy Conversion in Vienna
- Used spectroscopy to uncover the chemical root causes behind hard drive failures at Maxtor Advanced Technology

Education

University of Central Florida (CREOL) — MS Optics, 2002

University of California, Santa Cruz — MS Physics, 1998

University of California, Santa Cruz — BS Physics, 1995

References

<https://www.pcopticalengineering.com/testimonials/>

<https://www.linkedin.com/in/donnawaters/>